

Figure 1

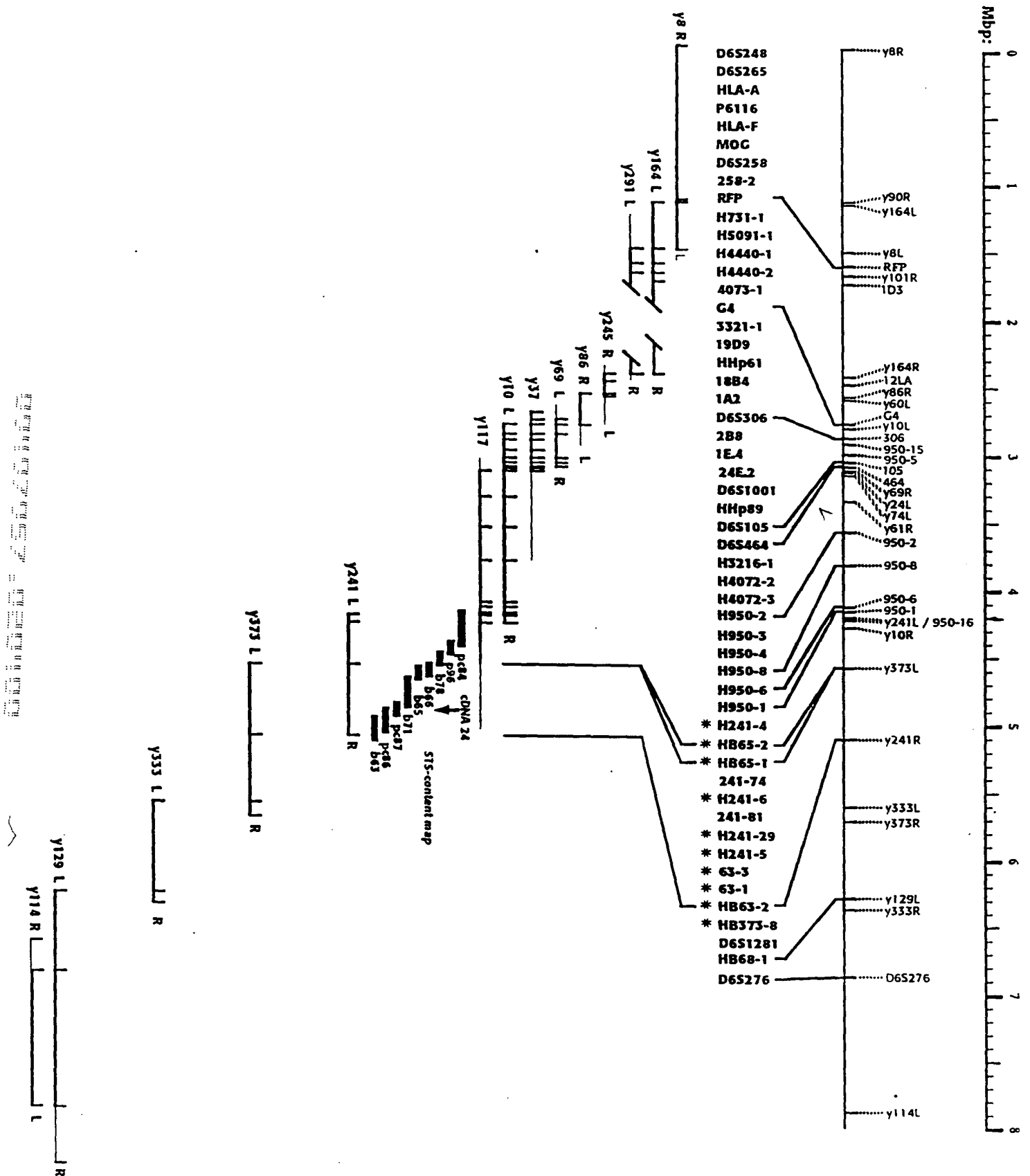


Figure 2

Patients	Markers										
	241-4	65-2	65-1	241-6	241-29	24d1	241-5	63-3	63-1	63-2	373-8
HC2	144	161	208	193	117	A	108	169	151	113	151
	144	159	206	205	113	A	108	169	151	113	151
HC22	144	159	206	205	113	A	108	169	151	113	151
	144	161	208	193	117	A	108	169	151	113	151
HC25	144	167	210	205	113	A	108	169	151	113	159
	144	159	206	205	113	A	108	169	151	113	151
HC29	144	159	206	205	113	A	108	169	135	133	155
	144	159	208	205	113	A	108	169	151	113	151
HC41	144	159	206	205	113	A	108	169	151	113	151
	144	159	206	205	113	A	108	169	151	113	151
HC50	144	161	210	193	119	A	108	169	151	113	151
	144	159	206	205	113	A	108	169	151	113	151
HC75	144	159	206	205	113	A	108	167	139	131	153
	144	159	206	205	113	A	108	169	151	113	149
HC87	144	161	208	193	117	A	108	169	151	113	147
	144	159	206	205	113	A	108	169	151	113	151
HC91	144	159	208	193	117	A	108	169	151	113	155
	144	159	206	205	113	A	108	169	151	113	149
HC125	146	161	210	205	115	A	108	169	151	113	153
	144	159	206	205	113	A	108	169	151	113	151
HC143	146	161	210	193	117	A	108	169	151	113	151
	146	159	206	205	113	A	108	169	151	113	151

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 -310 taaatattta aatatctaaa gttcagatca gaacattgcg aagctacttt
 -260 cccaatcaa caacaccct tcaggattta aaaaccaagg gggacactgg
 -210 atcacctagt gtttcacaag caggtacctt ctgctgtagg agagagagaa
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 -10 agctggggaa
 1 ATGGGCCCGC GAGCCAGGCC GGCGCTTCTC CTCCTGATGC TTTTGCAGAC
 51 CGCGGTCCTG CAGGGGCGCT TGCTGCgtga gtccgagggc tgcgggcgaa

 101 ctaggggcgc ggcgggggtg gaaaaatcga aactagcttt ttctttgcgc
 151 ttgggagttt gctaactttg gaggacctgc tcaaccctat ccgcaagccc
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 401 ctggggctcc ttgaacctgg aactcgggtt tatttccaat gtcagctgtg
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 501 gccgagaagg ctgagcaaac ccacagcagg atccgcacgg ggtttccacc
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 1001 ataaaaaatc tgggtttctg atgttatttc aagtactaca gctgcttcta
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 1901 gtaatgggct cagaagagga gccacaaaca aggttggtga ggcgcctgta

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 2151 gtctcctgaa tatattctga aggaagtgtc tgaaggattc tatgttgtgt
 2201 gagagaaaga gaagaattgg ctgggtgtag tagctcatgc caaggaggag
 2251 gccaggaga gcagattcct gagctcagga gttcaagacc agcctgggca
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 2351 gtggcatgca cctgtgatcc tagctactcg ggaggctgag gtggagggtg
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G T

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 4151 gtatggtgga aacacacttc tgcccctata ctctagtggc agagtggagg
 4201 aggttgcagg gcacggaatc cctggttggg gtttcagagg tggctgaggc

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A

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 8851 tgcccggcta atttttgtat ttttagtaga gacagggttt caccatgttg
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 8951 tcccaaagtg ctgagattac aggtgtgagc caccctgccc agccgtcaaa

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9001 agagtcttaa tatatatatc cagatggcat gtgtttactt tatgttacta
 9051 catgcacttg gctgcataaa tgtggtacaa gcattctgtc ttgaaggcca

 9101 ggtgcttcag gataccatat acagctcaga agtttcttct ttaggcatta
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 9201 gtgggttagaa aagttatgta gaaaaaagta aatgtgattt acgctcattg
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Figure 4

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S H S L H Y L F M G A S E Q D L G L S L

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F E A L G Y V D D Q L F V F Y D H E S R

gtgtggagcc ccgaactcca tgggtttcca gtagaatttc aagccagatg tggtgcagc
R V E P R T P W V S S R I S S Q M W L Q

tgagtccagag tctgaaaggg tgggatcaca tgttcaactgt tgacttctgg actattatgg
L S Q S L K G W D H M F T V D F W T I M

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E N H N H S K E S H T L Q V I L G C E M

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Q E D N S T E G Y W K Y G Y D G Q D H L

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E F C P D T L D W R A A E P R A W P T K

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L E W E R H K I R A R Q N R A Y L E R D

gccctgcaca gctgcagcag ttgctggagc tggggagagg tgttttgac caacaagtgc
C P A Q L Q Q L L E L G R G V L D Q Q V

ctcctttggc gaagggtgaca catcatgtga cctcttcagt gaccactcta cggctgtcggg
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ccttgaacta ctacccccag aacatcacca tgaagtggct gaaggataag cagccaatgg
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atgccaagga gttcgaacct aaagacgtat tgcccattgg ggtatgggacc taccagggtc
D A K E F E P K D V L P N G D G T Y Q G

ggataacctt ggctgtaccc cctgggggaag agcagagata tacgtgctag gtggagcacc
W I T L A V P P G E E Q R Y T C Q V E H

caggcctgga tcagcccttc attgtgatct gggagccctc accgtctggc accctagtca
P G L D Q P L I V I W E P S P S G T L V

ttggagtcat cagtgggaatt gctgtttttg tcttcattctt gttcattgga attttgttca
I G V I S G I A V F V V I L F I G I L F

taatattaag gaagaggcag ggttcaagag gagccatggg gcactacgtc ttagctgaac
I I L R K R Q G S R G A M G H Y V L A E

gtgagtga
R E *

ca cgcagcctgc agactcactg tgggaaggag acaaaactag agactcaaag
agggagtgc tttatgagct cttcatgttt caggagagag ttgaacctaa acatagaaat
tgcttgacga actccttgat cttagccttc tctgttcatt tcttcaaaaa gatttccccca

FIGURE 5

PCR Primers used for Amplification of 24d1 Alleles

24d1.P1 (forward primer)
5'-TGGCAAGGGTAAACAGATCC-3' (SEQ ID NO:13)
24d1.P2 (reverse primer)
5'-CTCAGGCACTCCTCTCAACC-3' (SEQ ID NO:14)

OLA Oligonucleotides for 24d1

Upstream Oligonucleotides (5'-biotinylated)

24d1.A (common allele)
5'-bio-GGAAGAGCAGAGATATACGTG-3' (SEQ ID NO:15)
24d1.B (hemochromatosis allele)
5'-bio-GGAAGAGCAGAGATATACGTA-3' (SEQ ID NO:16)

Downstream Oligonucleotides (5'-phosphorylated)

24d1.X 5'-p-CCAGGTGGAGCACCCAGG-dig-3' (SEQ ID NO:17)

FIGURE 6

Figure 6a

5'—TATTTCTTCCTCCAACCTATAGAAGGAAGTGAAAGTTCCAGTCTTCCTGGCAAGGGTAAACAGATCCCC
TCTCCTCATCCTTCCTCTTTCCTGTCAAGTGCCTCCTTTGGTGAAGGTGACACATCATGTGACCTCTTCAG
TGACCACTCTACGGTGTGGGCCTTGAACCTACTACCCCCAGAACATCACCATGAAGTGGCTGAAGGATA
AGCAGCCAATGGATGCCAAGGAGTTCGAACCTAAAGACGTATTGCCCAATGGGGATGGGACCTACCAGG
GCTGGATAACCTTGGCTGTACCCCCTGGGGAAGAGCAGAGATATACGTGCCAGGTGGAGCACCCAGGC
CTGGATCAGCCCCCTATTGTGATCTGGGGTATGTGACTGATGAGAGCCAGGAGCTGAGAAAATCTATTGG
GGGTTGAGAGGAGTGCCTGAGGAGGTAATTATGGCAGTGAGATGAGGATCTGCTCTTTGTTAGGGGGTG
GGCTGAGGGTGGCAATCAAAGGCTTTAACTT-3' (SEQ ID NO:20)

Figure 6b

5'—TATTTCTTCCTCCAACCTATAGAAGGAAGTGAAAGTTCCAGTCTTCCTGGCAAGGGTAAACAGATCCCC
TCTCCTCATCCTTCCTCTTTCCTGTCAAGTGCCTCCTTTGGTGAAGGTGACACATCATGTGACCTCTTCAG
TGACCACTCTACGGTGTGGGCCTTGAACCTACTACCCCCAGAACATCACCATGAAGTGGCTGAAGGATA
AGCAGCCAATGGATGCCAAGGAGTTCGAACCTAAAGACGTATTGCCCAATGGGGATGGGACCTACCAGG
GCTGGATAACCTTGGCTGTACCCCCTGGGGAAGAGCAGAGATATACGTACCAGGTGGAGCACCCAGGC
CTGGATCAGCCCCCTATTGTGATCTGGGGTATGTGACTGATGAGAGCCAGGAGCTGAGAAAATCTATTGG
GGGTTGAGAGGAGTGCCTGAGGAGGTAATTATGGCAGTGAGATGAGGATCTGCTCTTTGTTAGGGGGTG
GGCTGAGGGTGGCAATCAAAGGCTTTAACTT-3' (SEQ ID NO:21)

Figure 7

III protein	M G P R A R P A L L L L M L L L L Q T A V L Q G R L R S H S L H Y L E M G A S E O D L G L S L E A L G Y V D D O L E V F
RIA	- M S I P P R T L L L L L A G A L T L K D T Q A G S H S H R Y E Y T S V S R P G L G E P R E I I V G Y V D D O Q E V R
IMHC	- M A V M A P R T L V L L L S G A L A L T Q T W A G S H S H R Y E F T S V S R P G R G E P R E I A V G Y V D D O Q E V R
III protein	Y D H E - - S R R V E P R T P W V S S R I S S O M L Q L S Q S L K G W D H M E T V D E W T I M E N H N H S - K E S H T
RIA	E D S D A A S P R M E Q R A P W M G - Q V E P E Y W D Q Q T Q I A K D T A Q T E R V N L N T A L R Y Y N Q S A A G S H T
IMHC	E D S D A A S Q R M E P R A P W I E - Q E G P E Y W D G E T R K K V K A H S Q T H R V D L G T L R G Y Y N Q S E A G S H T
III protein	L Q V I L G C E M Q E D N - S T E G Y W K Y G Y D G Q D H L E F C P D T L D W R A A E P R A W P T K L E W E R H K I R A
RIA	F Q T M E G C E V W A D G R E F H G Y R Q Y A Y D G A D Y I A L N E D L R S W T A A D T A A Q N T Q R K W E A A G E A E
IMHC	L Q M E F G C D V G S D W R F L R G Y H Q Y A Y D G K D Y I A L K E D L R S W T A A D M A A Q T T K H K W E A A H V A E
III protein	R Q N R A Y L E R D C P A Q L Q O L L E L G R G V L D Q Q V P P L V K V T H H V T S S - V T T I R C R A L N Y Y P O N I
RIA	R - H R A Y L E R E C V E W L R R Y L E M G K E T L Q R A D E P K A H V T H H P A S D R E A T L R C W A L G E Y P A E I
IMHC	Q - L R A Y L E G T C V E W L R R Y L E N G K E T L Q R T D A P K T H M T H H A V S D H E A T L R C W A L S E Y P A E I
III protein	T M K M L K D - - K Q P M D A K E F E P K D V L P N G D G T Y Q G W I T L A V P P G E E Q R Y T C Q V E H P G L D Q P L
RIA	S L T W Q R D G E D Q T Q D T E L V E T R - - P G G D G T F Q K W A A Y V P S G E E Q R Y T C R V Q H E G L P E P L
IMHC	T L T W Q R D G E D Q T Q D T E L V E T R - - P A G D G T F Q K W A A V V P S G Q E Q R Y T C H V Q H E G L P K E L
III protein	I V I W E P S P S - G T L V I G V I S G I A V E V V I L F I G I L P I I L R K R Q G S R G A M G H Y V L A E R E - - -
RIA	T L T W E P P A Q P T A L I V G I V A G - V L G V L L I L G A V V A V V R R K K H S S D G K G R Y T P A A G C H R D Q
IMHC	T L R W E P S S Q P T I P I V G I I A G L V L F G A V I T G A V V A A V W W R R K S S D R K G G S Y S Q A A S S D S A Q
III protein	- - - - -
RIA	G S D D S L M P - - -
IMHC	G S D V S L T A C K V

Figure 8

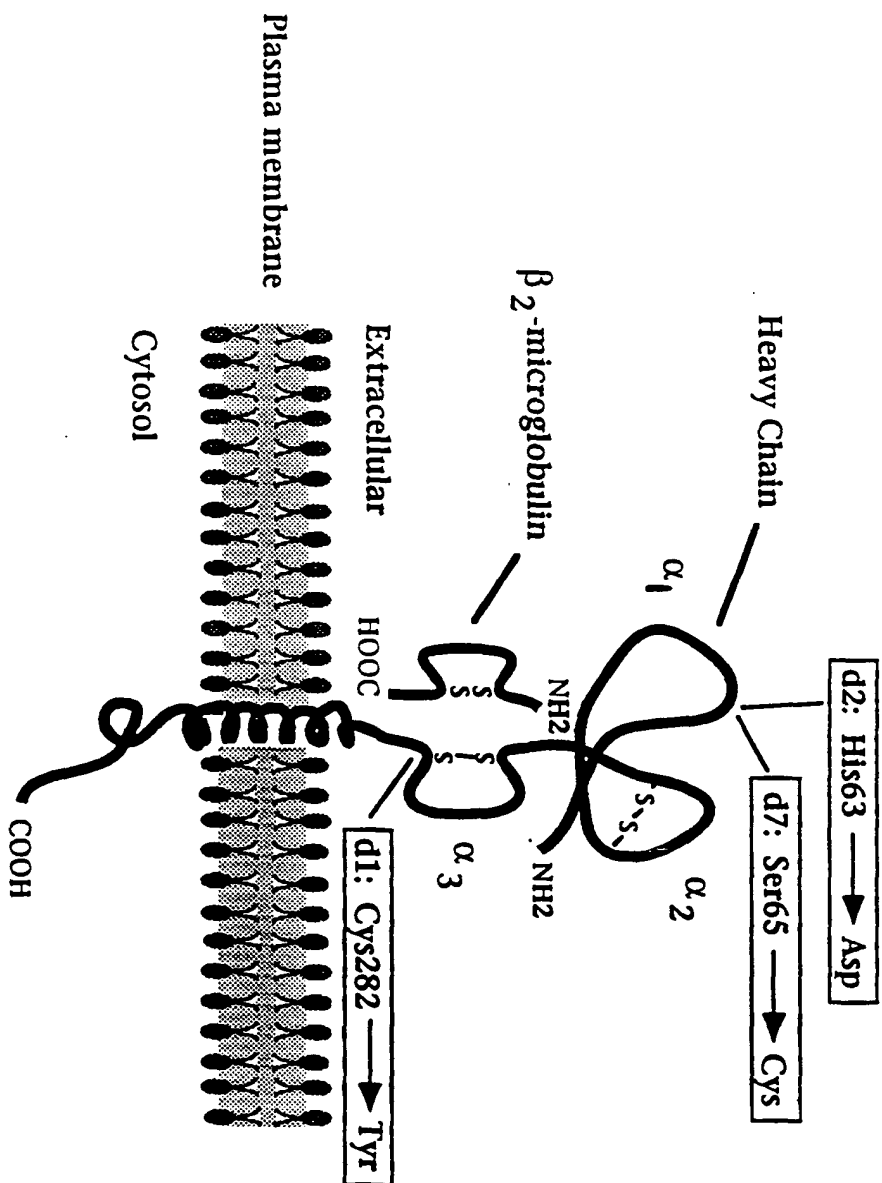


FIGURE 9

PCR Primers used for Amplification of 24d2 Alleles

- 24.P2.1 (forward primer)
5'-ACATGGTTAAGGCCTGTTGC-3' (SEQ ID NO:24)
- 24.P2.2 (reverse primer)
5'-GCCACATCTGGCTTGAAATT-3' (SEQ ID NO:25)

OLA Oligonucleotides for 24d2

Upstream Oligonucleotides (5'-biotinylated)

- 24d2.A (common allele)
5'-bio-AGCTGTTCGTGTTCTATGATC-3' (SEQ ID NO:26)
- 24d2.B (hemochromatosis allele)
5'-bio-AGCTGTTCGTGTTCTATGATG-3' (SEQ ID NO:27)

Downstream Oligonucleotides (5'-phosphorylated)

- 24d2.X 5'-p-ATGAGAGTCGCCGTGTGGA-dig-3' (SEQ ID NO:28)